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FIVE NEW SPECIES OF *PLECTRANTHUS* L. HERIT (LAMIACEAE) FROM QUEENSLAND

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Summary

***Plectranthus graniticola*, *P. minutus*, *P. nitidus*, *P. omissus* and *P. torrenticola* are described as new. All are endemic to Queensland except for *P. nitidus* which also occurs in New South Wales. All are restricted in distribution and are endangered species. A new description is provided for *P. argentatus* S.T. Blake to compare it with the allied species – *P. graniticola*, *P. omissus* and *P. torrenticola*. New localities for *P. gratus* S.T. Blake and *P. amicorum* S.T. Blake in Queensland are recorded and both species are allocated conservation codings. A new locality for *P. arenicola* P. Forster is recorded and the species is allocated a revised conservation coding. *P. amboinicus* (Lour.) Sprengel is recorded as naturalised in the Brisbane area. A key to the native and naturalised species of *Plectranthus* occurring in Queensland is presented.**

Introduction

Since the revision of *Plectranthus* L. Herit. in Australasia by Blake (1971), relatively few collections of the genus have been added to the holdings at the Queensland Herbarium and some confusion has reigned among collectors as to the identity of a number of their recent collections from Queensland. In previous papers (Forster 1991a, 1992), two new Queensland species, *P. arenicola* P. Forster ('arenicolus') and *P. blakei* P. Forster, were named and compared with allied taxa. A putative hybrid between *P. alloplectus* and *P. graveolens* has also been documented (Forster 1991b).

Recent fieldwork in Queensland has revealed the existence of a further five new species, new localities for several rarely collected previously described species and the naturalisation of a south-east Asian species. A key to all species of the genus in Queensland is provided. As three of the new species, namely *P. graniticola*, *P. torrenticola* and *P. omissus* are superficially similar and likely to be confused with *P. argentatus* S.T. Blake, a new comparative account is also given for the latter species.

Characters that are important in distinguishing species of *Plectranthus* in Queensland include the presence/absence of an indumentum of trichomes; the type of indumentum (stalked multicellular trichomes with an apical gland (referred to throughout as 'glandular'), stalked multicellular trichomes lacking an apical gland (referred to throughout as 'non-glandular'); presence/absence of sessile glands and the number of cells in the sessile glands when present; the number of teeth on each margin of the leaf lamina; the number of flowers in each verticillaster; corolla lobe size and shape, corolla tube shape and the nature of the indumentum on the corolla. Most of these characters were used and emphasised by Blake (1971) in his delimitation of species. However, because his key does not consist of strictly dichotomous couplets, the usefulness of these attributes has been largely obscured and botanists seeking identification of material using the key have usually experienced problems in reaching a successful answer.

Most taxa, apart from *P. minutus*, are in cultivation and propagating material has been distributed to several interested growers and the Australian National Botanic Gardens. Interested parties should contact the author for propagating material.

In the following descriptions, indumentum cover is described using the terminology of Hewson (1988), except that 'scattered' is used instead of 'isolated'. Unless otherwise stated, trichomes are clear and not coloured.

Taxonomic Treatment

1. Plectranthus torrenticola P. Forster, **sp. nov.** affinis *P. graveolenti* R. Br. a quo foliis argenteis, verticllastris 10–12-floris, corolla 9.8–1.2 mm longa, calyce fructificanti 5.4–6.0 mm longo differt. **Typus:** Queensland. MORETON DISTRICT: State Forest Drive, 20 February 1991, *P.I. Forster* 7797 & *P.R. Sharpe* (holo: BRI!; iso: CANB!,K!,MEL!,NSW!).

Subshrub to 30 cm high, foliage slightly scented. Stems or lateral branches erect to straggling, the lower parts woody and up to 5 mm thick, seedling-derived stems lacking a tuberous base; upper parts with dense, retrorse, 5–8-celled non-glandular silver trichomes to 0.4 mm long, lacking glandular trichomes and sessile glands. Leaves discolorous; petiole 8–18 mm long, 2–3 mm wide, with dense, divaricate, 5–8-celled non-glandular silver trichomes to 0.4 mm long, dense glandular trichomes to 0.1 mm long, lacking sessile glands; lamina narrow-ovate, 20–60 mm long, 2–5 mm wide, fleshy, serrate with 10–16 teeth on each margin, occasionally with 1 or more secondary teeth; upper surface green, veins impressed, with sparse to dense, retrorse, 4–8-celled glandular and non-glandular silver trichomes to 0.4 mm long, lacking sessile glands; lower surface pale-green, veins raised, with dense, retrorse, 5–8-celled non-glandular silver trichomes to 0.4 mm long, dense glandular silver trichomes to 0.1 mm long, lacking sessile glands. Inflorescence cymose, 20–30 cm long, comprising 1–3(5) pedunculate branches; each branch 4–18 cm long; axis with dense, retrorse, 4–8-celled non-glandular silver trichomes to 0.4 mm long and glandular silver trichomes to 0.1 mm long, sessile glands lacking; bracts broad-ovate, 4.3–4.5 mm long, 4.9–5 mm wide, with dense, retrorse, 4–8-celled non-glandular and glandular silver trichomes to 0.4 mm long, lacking sessile glands. Verticillasters 10–12-flowered, 4–11 mm apart; pedicels 3–5 mm long, c. 0.3 mm diameter, with sparse, antrorse, 4–8-celled non-glandular and glandular silver trichomes, sessile glands absent. Calyx 1.8–2.1 mm long, with sparse to dense, antrorse, 2–4-celled non-glandular and glandular trichomes to 0.4 mm long, sessile glands absent. Corolla 9.8–12.2 mm long, light-purple; tube 5.3–6.0 mm long, abruptly curved at an angle of c. 30° 2.1–2.2 mm from base, slightly inflated upwards, glabrous; upper lobes subcircular, 1.7–2.1 mm long, 1.9–2.2 mm wide, with scattered, divaricate, 2–4-celled non-glandular trichomes on margins, lacking glandular trichomes and sessile glands; lateral lobes broadly-ovate, 0.9–1.0 mm long, 0.9–1.0 mm wide, lacking trichomes and sessile glands; lower lobe oblong, 4.6–5.6 mm long, 2.7–4.5 mm wide, with scattered, retrorse, 2–4-celled non-glandular trichomes up to 0.2 mm long, lacking glandular trichomes and sessile glands. Filaments filiform, 8–9 mm long, fused for c. 5 mm in bottom of tube, purple; anthers c. 0.3 mm long and 0.2 mm wide. Style 8.5–9.5 mm long, purple. Fruiting calyx 5.4–6.0 mm long; upper lobe ovate, 3.0–3.2 mm long, 2.3–2.4 mm wide, with sparse, antrorse, 2–4-celled non-glandular trichomes to 0.2 mm long, lacking glandular trichomes and sessile glands; lateral lobes lanceolate-falcate, 3.0–3.2 mm long, c. 0.6 mm wide, with scattered, divaricate, 2–4-celled non-glandular trichomes to 0.2 mm long, lacking glandular trichomes and sessile glands; lower lobes lanceolate-falcate, 3.5–3.8 mm long, c. 0.6 mm wide, with scattered, divaricate, 2–4-celled non-glandular trichomes to 0.2 mm long, lacking glandular trichomes and sessile glands. Seed semi-spherical, c. 0.8 mm long, 0.8 mm wide, 0.5 mm thick, brown. **Fig. 1C & D.**

Specimens examined. Queensland. MORETON DISTRICT: N of Mapleton, Apr 1987, *Sharpe* 4676 & *Tan* (BRI); N of Mapleton, Jun 1984, *Hadlow* 375 (CBG); S of Mapleton, Apr 1989, *Sharpe* 4867 (BRI); near Kondalilla National Park, Feb 1991, *Forster* 7795 & *Sharpe* (BRI,MEL); Bli Bli, Aug 1991, *Leiper* s.n. (BRI).

Distribution and habitat: Known from the Blackall Range north of Nambour and near Bli Bli. Plants grow in open heathland on rock outcrops, often but not exclusively near water, along the edges of rainforest or along the edges of open eucalypt forest. At one locality, *P. parviflorus* Willd. grows in association with *P. torrenticola*, whereas at another locality, *P. graveolens* R. Br. is present with it.

Notes: *P. torrenticola* is vegetatively superficially similar and probably most closely allied to *P. argentatus* S.T. Blake, *P. graniticola* P. Forster and *P. omissus* P. Forster, but differs from them in a number of characters that are compared in **Table 1.** In Blake's key (1971), *P. torrenticola* keys to *P. graveolens* but differs from that species by its silver foliage, the 10–12 flowers in each verticillaster, the corolla 9.8-12.2 mm long and the fruiting calyx 5.4–6 mm long. *P. torrenticola* also lacks 4-celled sessile glands which are unique to *P. argentatus* and *P. omissus* in the taxa occurring in south-east Queensland. Further studies using non-morphological characters are required to evaluate relationships within this group of taxa.

Conservation status: This is a most uncommon plant and is under direct threat because several localities where it occurs experience considerable disturbance from human visitation. Further survey work is required in similar habitats in the Blackall Range to

Table 1. Comparison of morphological characters of *Plectranthus argentatus*, *P. graniticola*, *P. omissus* and *P. torrenticola*

Character	*argentatus*	*omissus*	*torrenticola*	*graniticola*
4-celled sessile glands	present	present	absent	absent
flower no. in verticillaster	6–10	14–16	10–12	14–16
corolla colour	white to lilac-white	lilac-blue	lilac	purple
corolla tube angle (°)	0–10	110–130	30	40–45
corolla tube length (mm)	5–5.1	4.8–5	9.8–12.2	5.5–6
trichomes on corolla tube	absent	present	absent	present
sessile glands on corolla tube	absent	present	absent	absent
corolla upper lobes size	1.4–1.5	2.4–2.5	1.7–2.1	2.3–2.5
(length × width mm)	×1.5–1.7	×2.4–2.5	×1.9–2.2	×2.8–3
corolla lower lobe size	4–4.2	4.4–4.5	4.6–5.6	6.3–6.8
(length × width mm)	×4–4.2	×3–3.2	×2.7–4.5	×4–4.2

determine whether other populations of this species exist there. An appropriate conservation coding is 2EC (cf. Briggs & Leigh 1988).

Etymology: The specific epithet from *torrens* (torrent) and *cola* (dweller) alludes to the common preference of this species to growing in rock outcrops next to rushing streams (torrents).

2. **Plectranthus omissus** P. Forster, **sp. nov.** affinis *P. argenteo* S.T. Blake a quo verticillastris 14–16-floribus, floribus lilacinis, corollae tubo 4.8–5.0 mm longo ad angulum 110–130° c. 1.4 mm e basi deflexo, uterque trichomatibus et glandulis sessilibus, lobis superioribus 2.4–2.5 mm longis et 2.4–2.5 mm latis, labeo inferiore longiore quam lato, 4.4–4.5 mm longo, 3.0–3.2 mm lato differt. **Typus:** Queensland. WIDE BAY DISTRICT: Mudlow Gap, Beauty Spot 11, Timber Reserve 26, 8 km N of Kilkivan, 21 February 1989, *P.I. Forster* 4977 (holo: BRI!; iso: CANB!,K!,MO!).

Subshrub to 1 m high, foliage slightly scented. Stems and lateral branches erect or straggling, the lower parts woody and up to 1 cm thick, seedling stems lacking tuberous bases; upper parts with sparse to dense, retrorse, 6–8-celled non-glandular silver trichomes up to 0.6 mm long but commonly much shorter, lacking glandular trichomes, with sparse sessile 4-celled glands. Leaves concolorous, green; petioles 25–36 mm long, 3.8–4.0 mm diameter, with dense, divaricate, 6–8-celled non-glandular silver trichomes to 0.6 mm long, lacking glandular trichomes, with sparse to dense sessile 4-celled glands; lamina broadly ovate, 2–8 cm long, 3–6 cm wide, somewhat fleshy, serrate with 17–19 teeth on each margin, occasionally with 1 or more secondary teeth; upper surface with venation impressed and with dense, retrorse, 6–8-celled non-glandular silver trichomes to 0.6 mm long, lacking glandular trichomes, with sparse to dense sessile 4-celled glands; lower surface with venation raised and with dense, retrorse, 6–8-celled non-glandular silver trichomes to 0.6 mm long, lacking glandular trichomes, with dense sessile 4-celled glands. Inflorescence cymose, comprising 1–5 branches with occasional side branches; each branch pedunculate, 15–35 cm long; axis with sparse to dense, retrorse, 6–8-celled non-glandular silver trichomes to 0.4 mm long, lacking glandular trichomes, with sparse to dense sessile 4-celled glands; bracts lanceolate, 2.3–2.4 mm long, 0.9–1.0 mm wide, with dense, retrorse, 6–8-celled non-glandular trichomes to 0.2 mm long, lacking glandular trichomes, with dense sessile 4-celled glands. Verticillasters 14–16-flowered, 8–13 mm apart; pedicels 3.0–3.4 mm long, c. 0.3 mm diameter, with dense, ± retrorse, 6-celled non-glandular trichomes to 0.2 mm long, lacking glandular trichomes, with scattered sessile 4-celled glands. Calyx 2.6–2.8 mm long, with dense, retrorse, 6–8-celled non-glandular trichomes to 0.4 mm long, lacking glandular trichomes, with dense sessile 4-celled glands. Corolla 8.5–8.8 mm long, lilac; tube 4.8–5.0 mm long, abruptly curved at an angle of 110–130° c. 1.4 mm from base, slightly inflated upwards and then constricted to the slightly oblique mouth, with scattered, divaricate, 4–6-celled non-glandular trichomes to 0.4 mm long, lacking glandular trichomes, with scattered sessile 4-celled glands; upper lobes subcircular, 2.4–2.5 mm long, 2.4–2.5 mm wide, with sparse, divaricate, 4–6-celled non-glandular trichomes to 0.4 mm long, lacking glandular trichomes, with sparse sessile 4-celled glands; lateral lobes ovate, 1.0–1.2 mm long, c. 0.8 mm wide, lacking non-glandular and glandular trichomes, with scattered sessile 4-celled glands; lower lobe oblong, 4.4–4.5 mm long, 3.0–3.2 mm wide, with scattered, divaricate, 4–6-celled non-glandular trichomes to 0.4 mm long, lacking glandular trichomes, with sparse sessile 4-celled glands. Filaments filiform, 6–7 mm long, fused to tube in bottom 2–3 mm, lilac; anthers 0.4–0.5 mm long, c. 0.3 mm wide. Style 3.0–3.5 mm long, lilac. Fruiting calyx 4.0–4.8 mm long, all lobes with dense, retrorse, 4–6-celled non-glandular trichomes to 0.4 mm long, lacking glandular trichomes, with dense sessile 4-celled glands; upper lobe lanceolate-triangular, 1.7–1.8 mm long, 1.2–1.4 mm wide; lateral lobes lanceolate-falcate, 1.3–1.5 mm long, c. 1.2 mm wide; lower lobes lanceolate-falcate, 2.4–2.5 mm long, 0.5–0.6 mm wide. Seed hemi-spherical, 0.7–0.8 mm long, c. 0.7 mm wide, 0.4 mm thick. **Fig. 1I & J.**

Specimens examined: Known only from the type collection.

Distribution and habitat: Known only from the type locality, where plants grow on south-facing rock outcrops bordering araucarian notophyll vine forest at an altitude of c. 240 m.

Notes: *P. omissus* was previously considered to be a northerly outlying population of *P. argentatus* (Forster & Sharpe 1989). However, more recent collections of this latter species led me to reconsider the material from Mudlow Gap, whereupon several diagnostic characters that could be used to distinguish the two species were recognised (**Table 1**). *P. omissus* is also superficially similar to *P. graniticola* and *P. torrenticola*, but may be distinguished from those taxa by a number of characters (**Table 1**).

Conservation status: The only known population of *P. omissus* comprises 30 to 40 plants on a steep rock outcrop adjacent to an old logging road in a designated Beauty Spot within a Queensland Forest Service Timber Reserve. The immediate area is infested with *Lantana camara* and *Ageratum houstonianum* and further exploration is required to determine whether additional populations occur. An appropriate conservation coding for *P. omissus* is 1E (cf. Briggs & Leigh 1988).

Etymology: The specific epithet *omissus* (neglected) alludes to the overlooked nature of the species, both from its late discovery and from my initial reluctance to acknowledge its uniqueness.

3. Plectranthus graniticola P. Forster, **sp. nov.** affinis *P. omisso* P. Forster a quo glandulis sessilibus 8-cellularibus, corolla 12–13 mm longo constanti ex tubo 5.5–6.0 mm longo c. 3 mm e basi ad angulum 40–45° abrupte defracto, lobo inferiore 6.3–6.8 mm longo, 4.0–4.2 mm lato, sparso usque denso indumento non glandulare ornato et glandulis sessilibus carenti differt. **Typus:** Queensland. South Kennedy District: Clarke Range, Eungella National Park, 23 April 1991, *P.I. Forster* 8056 & *W.J.F. McDonald* (holo: BRI!; iso: K!,MEL!,QRS!).

Subshrub to 40 cm high, foliage scentless. Stems and lateral branches erect to straggling, the lower parts woody and up to 8 mm thick, seedling stems lacking tuberous bases; upper parts with dense, retrorse, 4–8-celled non-glandular silver trichomes up to 0.8 mm long but commonly much shorter, lacking glandular trichomes, with very scattered sessile 8-celled glands. Leaves concolorous, green; petioles 2–45 mm long, 1–2 mm diameter, with dense, retrorse 4–8-celled non-glandular silver trichomes to 0.8 mm long, lacking glandular and sessile glands; lamina lanceolate-ovate, 13–70 mm long, 6–50 mm wide, somewhat fleshy, serrate with 15–18 teeth on each margin, occasionally with 1 or more secondary teeth; upper surface with venation impressed and with sparse to dense, antrorse 4–8-celled non-glandular silver trichomes to 8 mm long, lacking glandular trichomes, with scattered 8-celled sessile glands; lower surface with venation raised and with dense divaricate to retrorse 4–8-celled non-glandular silver trichomes to 0.8 mm long, lacking glandular trichomes, with dense sessile 8-celled glands. Inflorescence cymose, comprising

1–3 branches; each branch pedunculate, 5–17 cm long; axis with dense, retrorse 4–8-celled non-glandular silver trichomes to 1 mm long, lacking glandular trichomes and sessile glands; bracts lanceolate-ovate, 1.5–1.8 mm long, 1.2–1.4 mm wide, with dense, divaricate 4–8-celled non-glandular trichomes to 0.1 mm long, lacking glandular trichomes, with dense sessile 8-celled glands. Verticillasters 14–16-flowered, 5–13 mm apart; pedicels 5–6 mm long, c. 0.4 mm diameter, with dense, divaricate 4–8-celled non-glandular trichomes to 0.8 mm long, lacking glandular trichomes and sessile glands. Calyx 3.3–3.5 mm long, with dense, divaricate 4–8-celled non-glandular trichomes to 1 mm long, lacking glandular trichomes and sessile glands. Corolla 12–13 mm long, purple; tube 5.5–6.0 mm long, abruptly curved at an angle of 40–45° c. 3 mm from base, slightly inflated upwards and then constricted to the slightly oblique mouth, with scattered, divaricate, 4-celled non-glandular trichomes to 0.4 mm long, lacking glandular trichomes and sessile glands; upper lobes subcircular 2.3–2.5 mm long, 2.8–3.0 mm wide, ciliate and with dense, divaricate, 4-celled non-glandular trichomes to 0.4 mm long, lacking glandular trichomes and sessile glands; lateral lobes rounded-oblong, 1.2–1.4 mm long, 1.0–1.2 mm wide, lacking trichomes, with scattered 8-celled sessile glands; lower lobe oblong, 6.3–6.8 mm long, 4.0–4.2 mm wide, with sparse to dense, divaricate, 4–6-celled non-glandular trichomes to 0.6 mm long, lacking glandular trichomes and sessile glands. Filaments filiform, 10–11 mm long, lilac; fused to tube in bottom 4–5 mm; anthers 0.6–0.7 mm long, c. 0.4 mm wide. Style 10–11 mm long, lilac. Fruiting calyx 5.5–6.0 mm long, all lobes with dense, antrorse, 4–8-celled non-glandular trichomes to 0.8 mm long, lacking glandular trichomes, with scattered to sparse 8-celled sessile glands; upper lobe rounded, 2.7–2.9 mm long, 2.3–2.4 mm wide; lateral lobes falcate-ovate 2.3–2.5 mm long, 1.3–1.4 mm wide; lower lobes falcate-ovate, 2.3–2.8 mm long, c. 0.4 mm wide. Seed semi-spherical, 1.2–1.3 mm long, c. 1 mm wide and 0.9 mm thick, brown. **Fig. 1G & H.**

Specimens examined: Queensland. SOUTH KENNEDY DISTRICT: Mt Dalrymple summit, Eungella National Park, Apr 1991, *Telford* 11167 (BRI,CBG).

Distribution and habitat: Known only from Eungella National Park, Clarke Range in central Queensland. Plants grow on granite rock outcrops above 700 m altitude, generally bordering notophyll vineforests and usually in full sun.

Conservation status: It seems remarkable that this species has not previously been collected (no collections in BRI,CANB,CBG,QRS) and was then coincidentally collected from two localities in the Eungella National Park on the same day by different collectors. Undoubtedly the long-time gazettal of this area as National Park has discouraged collectors from officially documenting its flora. Apart from the two cited localities, there is also a population present at Skywindow, Eungella National Park; however, the sheer precipice it occurs on precluded my collecting it on that particular occasion. It is probable that additional populations of it occur in suitable habitats around the entire scarp of the Eungella plateau but further survey work is required to confirm this. An appropriate conservation coding is 2EC (cf. Briggs & Leigh 1988).

Etymology: The specific epithet refers to the occurrence of this species on exposed granite rock outcrops.

4. **Plectranthus argentatus** S.T. Blake, Contrib. Queensl. Herb. 9: 27 (1971). **Type:** Queensland. MORETON DISTRICT: Mt Roberts, McPherson Range, May 1955, *S.T. Blake* 19803 (holo: BRI!).

Subshrub to 60 cm high; foliage scentless. Stems or lateral branches erect to straggling, the lower parts woody and up to 7 mm thick, seedling derived stems lacking a tuberous base, pink to green; upper parts with dense, retrorse, 4–8-celled non-glandular silver trichomes to 0.6 mm long, lacking glandular trichomes, with dense 4-celled sessile glands. Leaves concolorous, silver-green; petioles 4–35 mm long, 1.5–4.0 mm wide, with sparse to dense, retrorse, 4–8-celled non-glandular silver trichomes to 0.8 mm long, lacking glandular trichomes, with scattered 4-celled sessile glands; lamina ovate, 3–8 mm long, 2–6 mm wide, fleshy, serrate with 12–28 leaf teeth on each margin, occasionally with 1 or more secondary teeth; upper surface with veins impressed and with sparse to dense, antrorse, 4–8-celled non-glandular silver trichomes to 0.6 mm long, with widely scattered glandular trichomes to 0.1 mm long, with scattered 4-celled sessile glands; lower surface with veins raised and with sparse to dense, retrorse to divaricate, 4–8-celled non-glandular silver trichomes to 0.8 mm long, lacking glandular trichomes, with sparse to dense 4-celled sessile glands. Inflorescence cymose, 5–19 cm long, comprising 1–3 pedunculate branches, each branch 3–18 cm long; axis with dense, retrorse, 4–8-celled non-glandular trichomes to 0.6 mm long, lacking glandular trichomes, with dense 4-celled sessile glands; bracts narrow-ovate, 2.5–3.7 mm long, 1.3–1.5 mm wide, with sparse, retrorse, 4–8-celled non-glandular trichomes to 0.6 mm long, lacking non-glandular trichomes, with scattered 4-celled sessile glands. Verticillasters 6–10-flowered, 5–25 mm apart; pedicels 2.6–5.0 mm long, c. 0.4 mm diameter, with sparse to dense, retrorse to divaricate, 4-celled non-glandular trichomes to 0.5 mm long, lacking non-glandular trichomes and sessile glands. Calyx 2.4–3.4 mm long, with sparse to dense, divaricate, 4–8-celled non-glandular trichomes to 0.8 mm long, lacking glandular trichomes, with dense 4-celled sessile glands. Corolla 5–10 mm long, white to lilac-white; tube 3.5–5.1 mm long, ± straight, glabrous, lacking sessile glands; upper lobes subcircular, 1.4–2.2 mm long, 1.5–2.3 mm wide, with scattered to sparse, divaricate, 2–4-celled non-glandular trichomes to 0.2 mm long, lacking glandular trichomes and with scattered to sparse 4-celled sessile glands; lateral lobes oblong, 0.8–1.5 mm long, 0.6–1.0 mm wide, glabrous, lacking sessile glands; lower lobe oblong, 4.0–4.8 mm long, 4.0–4.5 mm wide, with scattered, divaricate, 2–4-celled non-glandular trichomes to 0.2 mm long, lacking glandular trichomes, with 4-celled sessile glands. Filaments 8–10 mm long, filiform, white to pale lilac, fused to tube in lower 3–4 mm; anthers 0.5–0.6 mm long, c. 0.3 mm diameter. Style 7–10 mm long, white to pale lilac. Fruiting calyx 3.7–4.1 mm long, all lobes with sparse, divaricate, 4-celled non-glandular trichomes to 0.5 mm long, lacking glandular trichomes, with sparse 4-celled sessile glands; upper lobe ovate, 2.0–2.3 mm long, 1.5–1.8 mm wide, lateral lobes lanceolate-falcate, 1.9–2.1 mm long, 1.1–1.4 mm wide; lower lobes lanceolate-falcate, 2.0–2.5 mm long, 0.6–0.7 mm wide. Seed semi-spherical, 1.0–1.1 mm long, 0.8–0.9 mm wide, 0.5–0.6 mm thick. **Fig. 1A & B.**

Specimens examined (additional to those cited by Blake 1971): **Queensland.** DARLING DOWNS DISTRICT: Mt Mitchell, Cunningham's Gap, Great Dividing Range, NE of Warwick, May 1970, *Telford* 1530 (CBG); Wilson's Peak, Great Dividing Range, May 1969, *Telford* 480 (CBG); The Head, NE of Killarney, Mar 1980, *Bird & Williams* [AQ331886] (BRI); Spring Creek Plateau, 13 km ENE of Killarney, Sep 1973, *Telford* 3211 (CBG). MORETON DISTRICT: Springbrook Plateau, Feb 1991, *Forster* 7808 & *Leiper* (BRI); Double Peak, Mt Ballow area, McPherson Range, Sep 1990, *Forster* 7437B & *Leiper* (BRI); Mt Lindesay, Nov 1990, *Forster* 7572 & *Orford* (BRI). **New South Wales:** Moss Gardens, 6.5 km SW of Wilsons Peak, Jan 1986, *Forster* 2296 & *Bird* (BRI); cultivated at Rainworth (ex plant collected at Hanging Rock Road, Mebbin State Forest), Apr 1989, *Forster* 1923 (BRI,MEL,NSW).

Distribution and habitat: Restricted to the border ranges in Queensland and to adjacent parts of New South Wales. Plants grow on rock outcrops along rainforest margins and on exposed cliffs at altitudes above 800 m.

Conservation status: Although this species is endemic to the Border Ranges, it is relatively abundant in many localities within National Parks and does not warrant a conservation coding. (cf. Forster & Sharpe 1989).

5. **Plectranthus minutus** P. Forster, **sp. nov.** affinis *P. grato* S.T. Blake a quo folii lamina anguste ovata usque obovata serrata non nisi in dimidio superiore, dentibus folii 4 vel 5 paribus, glandulibus sessilibus 4-cellularibus, sine pilis glanduliferis, verticillastris 4–6-floris differt. **Typus:** Queensland. COOK DISTRICT: Mount Mulligan, a mesozoic sandstone mountain c. 40 km NW of Dimbulah, c. 0.5 km SE of the dam on the top of the mountain, 17 April 1985, *J.R. Clarkson* 5902 (holo: BRI!; iso: MBA!,MEL!,QRS!).

Subshrub to 50 cm high, foliage scent not recorded. Stems or lateral branches erect to straggling, red in strong light, the lower parts probably woody and up to 5 mm thick; seedling-derived stems lacking a tuberous base; upper parts with dense, antrorse, 4–6-celled non-glandular silver trichomes to 0.8 mm long but commonly much shorter, lacking glandular trichomes, with scattered 4-celled sessile glands. Leaves concolorous, green; petioles 2–3 mm long, 0.9–1.2 mm wide, with dense-velutinous, antrorse 4–8-celled non-glandular silver trichomes, lacking glandular trichomes and sessile glands; lamina narrow-ovate to obovate, 9–20 mm long, 4–8 mm wide, fleshy, serrate in upper half only with 4 or 5 indistinct teeth on each margin, lacking secondary teeth; upper surface with veins impressed but largely obscured due to dense-velutinous, antrorse, 4–8-celled non-glandular silver trichomes to 0.8 mm long, lacking glandular trichomes and sessile glands; lower surface with veins raised but largely obscured due to dense-velutinous, antrorse, 4–8-celled non-glandular silver trichomes to 0.8 mm long, lacking glandular trichomes and sessile glands. Inflorescence cymose, comprising 1 pedunculate branch, 10–20 cm long; axis red, with sparse to dense, antrorse, 4–6-celled non-glandular trichomes to 0.4 mm long, lacking glandular trichomes, with scattered 4-celled sessile glands; bracts lanceolate-ovate, 1.0–1.2 mm long, 0.6–0.7 mm wide, early deciduous, with dense, antrorse, 4-celled non-glandular trichomes to 0.2 mm long, lacking glandular trichomes, with dense 4-celled sessile glands. Verticillasters with 4–6 flowers, 6–20 mm apart; pedicels 4–5 mm long, c. 0.2 mm diameter, with dense, antrorse, 4-celled non-glandular trichomes to 0.2 mm long, lacking glandular trichomes, with scattered 4-celled sessile glands. Calyx 2.3–2.6 mm long, with dense, antrorse, 4-celled non-glandular trichomes to 0.4 mm long, lacking glandular trichomes, with scattered 4-celled sessile glands. Corolla 10–11 mm long, blue; tube 5.9–6.2 mm long, abruptly curved at c. 90° 2.2–2.3 mm from base, slightly inflated upwards and then constricted to the slightly oblique mouth, with scattered, divaricate, 3–4-celled non-glandular trichomes to 0.2 mm long on underside, lacking glandular trichomes and sessile glands; upper lobes subcircular 1.9–2.0 mm long, 1.8–1.9 mm wide, with scattered, divaricate, 3–4-celled non-glandular trichomes to 0.2 mm long, lacking glandular trichomes, with scattered 4-celled sessile glands; lateral lobes oblong, 0.8–0.9 mm long, c. 0.7 mm wide, glabrous, lacking sessile glands; lower lobe oblong, 4.7–5.1 mm long, 4–4.5 mm wide, with scattered, divaricate, 4-celled non-glandular trichomes to 0.3 mm long, lacking glandular trichomes, with scattered sessile glands. Filaments filiform, 8–10 mm long, blue, fused to tube in bottom 3–4 mm; anthers c. 0.5 mm long and 0.3 mm wide. Style 8–10 mm long, blue. Fruiting calyx 4–4.5 mm long, all lobes with sparse, divaricate, 4-celled non-glandular trichomes to 0.3 mm long, lacking glandular trichomes, with sparse 4-celled sessile glands; upper lobe ovate, 2.4–2.5 mm long, 2–2.1 mm wide; lateral lobes lanceolate-falcate, 2.4–2.5 mm long, 1.0–1.1 mm wide; lower lobes lanceolate-falcate, 2.8–3.0 mm long, 0.5–0.6 mm wide. Seed subspherical, 0.9–1.0 mm long, 0.8–0.9 mm wide, c. 0.4 mm thick, shiny dark brown. **Fig. 1K & L.**

Specimens examined: Queensland. COOK DISTRICT: Mount Mulligan on the southern plateau of the mountain, Apr 1984, *Clarkson* 5310 (BRI,MBA).

Distribution and habitat: *P. minutus* is known only from Mt Mulligan northwest of Mareeba, where it occurs sporadically in open rock pavements on mesozoic sandstone in association with clumps of *Plectrachne* sp. The unrelated *P. congestus* Benth. occurs in close proximity at the base of the mountain.

Notes: The type collection is scrappy and lacks a rootstock. Further collections, especially of live material, are required for an accurate assessment of variation within the species. Nevertheless this is a most distinctive species, particularly for its short petiolate, small leaves which have teeth only in the upper portion. It is also one of the few species, the others being *P. argentatus* and *P. omissus*, with 4-celled sessile glands. *P. minutus* falls within the group of taxa grouped around *P. gratus* but is not morphologically close to either this species or the allied *P. apreptus* or *P. arenicola.* A comparison of *P. minutus* with *P. gratus* is provided in **Table 2.**

Table 2. Comparison of several morphological characters of *Plectranthus gratus* and *P. minutus*

Character	*P. gratus*	*P. minutus*
glandular hairs on stems	present	absent
leaves	long-petiolate	short-petiolate
leaf lamina shape	ovate to broadly ovate to broadly trullate-ovate	narrow-ovate to obovate
leaf lamina teeth	present along entire lamina margin	present only in upper half of lamina edge
leaf lamina teeth on each margin	8 or 9	4 or 5
sessile glands	8-celled	4-celled

Conservation status: This is an uncommon plant at Mt Mulligan according to the collector J.R. Clarkson (pers. comm. 1991). An appropriate conservation coding is 2E (cf. Briggs & Leigh 1988).

Etymology: The specific epithet *minutus* alludes to the very small size of the leaves on flowering stems, as compared to those of other Australian *Plectranthus* species.

6. Plectranthus gratus S.T. Blake, Contrib. Queensl. Herb. 9: 49 (1971). **Type:** Queensland. COOK DISTRICT: cultivated at The Gap, Brisbane (ex plant collected at Walsh's Pyramid, Aug 1959, by R.F. Thorne), 20 January 1960, *S.T. Blake* 21192 (holo: BRI!).

Specimens examined (additional to those cited by Blake 1971): **Queensland.** COOK DISTRICT: Pete's Falls, near Mt Peter, Feb 1991, *Burke* s.n. (BRI); ditto, May 1991, *Orford* s.n. (BRI,MEL,QRS); Walsh's Pyramid, 2 km S of Gordonvale, Feb 1991, *Orford & Burke* s.n. (BRI); State Forest Reserve 700, Gillies Highway, Jun 1979, *Stocker* 1728 (QRS).

Conservation status: No conservation coding has previously been allocated to this species, despite it being known only from the type locality. Recent collections have confirmed its continued and common presence on Walsh's Pyramid and revealed other localities in the same general area. A suitable conservation coding is 2EC (cf. Briggs & Leigh 1988).

7. Plectranthus amicorum S.T. Blake, Contrib. Queensl. Herb. 9: 26 (1971). **Type:** COOK DISTRICT: Tinaroo Range, between Tinaroo Falls and Danbulla, August 1963, *S.T. Blake* 22094 (holo: BRI!).

Specimens examined (additional to those cited by Blake 1971): **Queensland.** COOK DISTRICT: Carrington Falls, Herberton Range, May 1991, *Forster* 8367 (BRI); 20 km (by road) SE of Mareeba on Tinaroo Creek road, May 1983, *Conn* 1198 & *de Campo* (BRI,CANB). NORTH KENNEDY DISTRICT: East of Baal Gammon Mine, c. 1 km (by road) N of Herberton to Irvinebank road, c. 7 km W of Herberton, Jun 1983, *Conn & de Campo* 1281 (BRI,MBA); Along road Watsonville – Irvinebank, May 1990, *van der Werff* 1160 (QRS).

8. Plectranthus arenicola P. Forster, Muelleria 7: 375 (1991) (as 'arenicolus'). **Type:** Queensland. COOK DISTRICT: cultivated at St Lucia, Brisbane (from material of the same collection as *P.I. Forster* 5456), 22 October 1989, *P.I. Forster* 5835 (holo: BRI; iso: K,MEL,QRS).

Specimens examined (additional to those cited by Forster 1991a): Queensland. COOK DISTRICT: Wasp Gully, Glennie Tableland, Jul 1991, *Tucker* s.n. (BRI,QRS); 30 km past Maloneys Springs on road to coast, Jul 1991, *Forster* 8834 (BRI).

Conservation status: As this species is now known from two localities, an updated coding is appropriately 2R (cf. Briggs & Leigh 1988).

9. Plectranthus nitidus P. Forster, **sp. nov.** affinis *P. aprepto* S.T. Blake a quo caulibus foliis racemisque trichomata apice glandulifera et glandules sessile carentibus, bracteis racemorum lanceolato-triangularibus 3.6–3.8 mm long, corollae tubo ad angulum 25–30° 1.5–1.7 mm e basi flexo differt. **Typus:** New South Wales. Cultivated at Byron Bay (ex plant collected at upper Terania Creek, Nightcap Range by P. Hardwick), 20 May 1991, *P. Hardwick* s.n. (holo: BRI!, 2 sheets + spirit; iso: K!,L!,MEL!,NSW!,QRS!).

Herb to 40 cm high, foliage scentless. Stems or lateral branches erect to straggling, the lower parts fleshy and up to 8 mm thick, seedling derived stems lacking a tuberous base; upper parts with scattered, antrorse, 2–4-celled non-glandular trichomes to 0.1 mm long, lacking glandular trichomes and sessile glands. Leaves discolorous; petioles 11–30 mm long, 1.0–1.3 mm diameter, with scattered, antrorse, non-glandular trichomes, lacking glandular trichomes and sessile glands; lamina lanceolate-ovate, 2.5–5.5 cm long, 1.5–3.5 cm wide, fleshy, serrate with 6–8 leaf teeth on each margin, occasionally with 1 or more secondary teeth; upper surface green, veins impressed, glabrous, lacking sessile glands; lower surface purple, veins raised, with scattered, antrorse, 2–4-celled non-glandular trichomes to 0.1 mm long, lacking glandular trichomes, with very scattered 8-celled sessile glands. Inflorescence cymose, 20–40 cm long, comprising 1–3(5) pedunculate branches; each branch 15–35 cm long; axis with scattered, antrorse, 2–4-celled non-glandular trichomes to 0.1 mm long, lacking glandular trichomes and sessile glands;

bracts lanceolate-triangular, 3.6–3.8 mm long, 2.5–2.6 mm wide, glabrous, ciliate, lacking sessile glands. Verticillasters 6–10-flowered, 6–19 mm apart; pedicels 4.0–6.3 mm long, c. 0.2 mm diameter, glabrous or with scattered, divaricate, 2-celled non-glandular trichomes to 0.1 mm long, lacking sessile glands. Calyx 2.5–2.7 mm long, with scattered, divaricate, 2-celled non-glandular trichomes to 0.1 mm long, lacking glandular trichomes, with scattered 8-celled sessile glands. Corolla 8–9 mm long, lilac-white; tube 3.8–4.4 mm long, abruptly curved at 25–30° 1.5–1.7 mm from base, slightly inflated upwards, glabrous, lacking sessile glands; upper lobes subcircular, 2.2–2.5 mm long, 2.0–2.2 mm wide, glabrous or with very scattered, divaricate, 2-celled non-glandular trichomes to 0.1 mm long, lacking sessile glands; lateral lobes oblong, 1.5–1.8 mm long, 0.8–1.0 mm wide, glabrous, lacking sessile glands; lower lobe oblong, 3.5–3.9 mm long, 2.3–3.1 mm wide, glabrous, lacking sessile glands. Filaments filiform, 7–9 mm long, lilac-white, fused for 3–4 mm in bottom of tube; anthers 0.5–0.6 mm long and 0.2 mm wide. Style 7–9 mm long, lilac-white. Fruiting calyx 3.6–3.8 mm long; upper lobe ovate, 1.8–2.8 mm long, 1.3–2.6 mm wide, glabrous, lacking sessile glands; lateral lobes lanceolate-falcate, 1.5–2.2 mm long, 0.7–0.9 mm wide, glabrous or with very scattered, divaricate, 2-celled non-glandular trichomes to 0.1 mm long, lacking glandular trichomes, lacking or with very scattered 8-celled sessile glands; lower lobes lanceolate-falcate, 2.2–3.1 mm long, 0.6–0.8 mm wide, glabrous or with very scattered, divaricate, 2-celled non-glandular trichomes to 0.1 mm long and either lacking or with very scattered 8-celled sessile glands. Seed semi-spherical, shiny black, 0.9–1 mm long, 0.5–0.8 wide, 0.3–0.4 mm thick. **Fig. 1E & F.**

Specimens examined: Queensland. MORETON DISTRICT: Mudgeeraba to Springbrook road, Feb 1991, *Forster* 7800 & *Leiper* (BRI). **New South Wales.** Terania Creek, 10 km NNE of The Shannon, Feb 1988, [*Hardwick* s.n.] *Coveny* 10625 (BRI); cultivated at Rainworth (ex plant collected at Terania Creek upper catchment, Nightcap Range by P. Hardwick in 1986), Mar 1991, *Forster* 7812 (BRI).

Distribution and habitat: Known only from two localities in the border ranges in Queensland and adjacent parts of New South Wales. Plants occur on rock outcrops either in rainforest or in open forest in close proximity to the rainforest margin.

Notes: This is a remarkable species in that it is the only Australian species that may occur totally under the rainforest canopy. It is closely allied to *P. apreptus* S.T. Blake from north Queensland and is probably the species referred to as such by Harden (1984) under that name. *P. nitidus* differs from *P. apreptus* in its stems, leaves and racemes lacking glandular trichomes and nearly always lacking sessile glands; the axis bracts lanceolate-triangular and 3.6–3.8 mm long; and the corolla tube bent at 25–30°, 1.5–1.7 mm from the base. There is some minor variation between the Springbrook and Terania Creek populations, the former being less woody, having consistently thinner leaves with purple colouring and less pronounced venation below, virtually no sessile glands and unbranched inflorescences. As the two populations are similar, it can be expected that when further populations are found they will contain intermediates. For these reasons, this variation is not considered worthy of formal taxonomic recognition at this time.

Conservation status: Further survey work is required both in and near to rainforest communities in the border ranges and northern New South Wales to ascertain the precise range of this species. A relevant conservation coding at this stage is 2EC (cf. Briggs & Leigh 1988).

Etymology: The specific epithet *nitidus* alludes to the shiny appearance of the foliage.

10. Plectranthus amboinicus (Lour.) Sprengel, Syst. Veg. 2: 690 (1825) (as 'amboinensis'); *Coleus amboinicus* Lour., Fl. Cochin. 372 (1790). **Type:** India. Patna, *Buchanan-Hamilton* (holo: K-W, fiche at BRI!).

Launert, Mitt. Bot. Munchen 7: 298 (1968); Codd, Bothalia 11: 388–389 (1975).

Specimen examined: MORETON DISTRICT: Esplanade, Brisbane River bank, St Lucia, Sep 1986, *Forster* 2611 (BRI).

Distribution and habitat: *P. amboinicus* is native to the Indian subcontinent and has become naturalised in a number of localities in suburban Brisbane where garden rubbish has been dumped. It is widely cultivated both as a decorative ornamental and for its culinary use as "Five Spice".

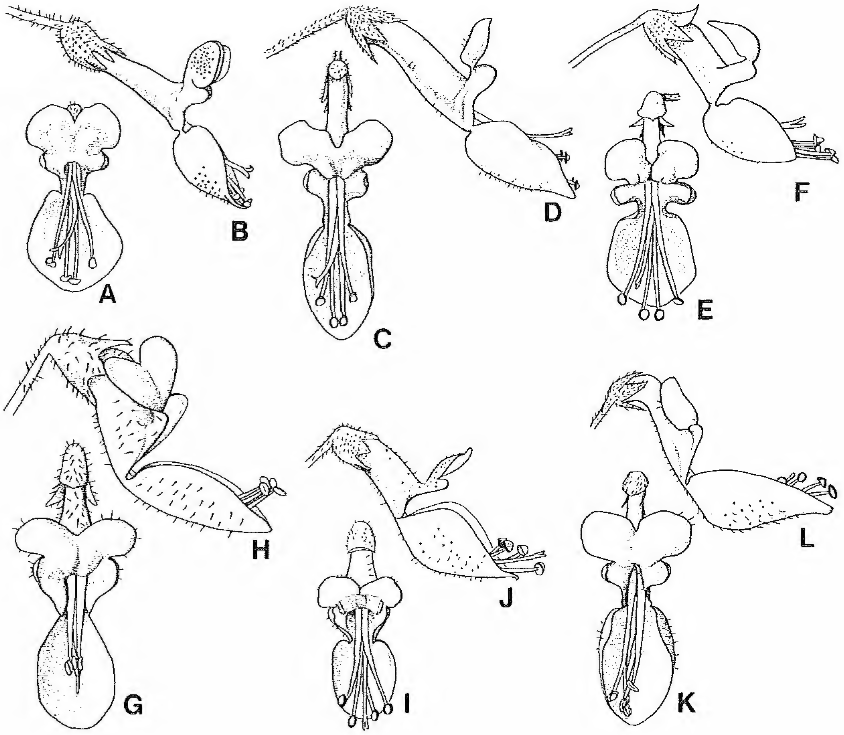

Fig. 1. Flowers of *Plectranthus* species: A,C,E,G,I,K. face view of flowers × 4. B,D,F,H,J,L. side view of flowers × 4. A,B, *P. argentatus* (Forster 1923); C,D, *P. torrenticola* (Forster 7795); E,F, *P. nitidus* (Forster 7812); G,H, *P. graniticola* (Forster 8056 & McDonald); I,J, *P. omissus* (Forster 4977); K,L, *P. minutus* (Clarkson 5902).

Notes: A good descriptive account and taxonomic bibliography for this species may be found in Codd (1975).

Key to species of *Plectranthus* in Queensland

Notes: This key works best with fresh material and is partially adapted from that of Blake (1971). Hybrids are not accounted for.

1. Stems, branches, floral axes and the lower surface of the leaves with divaricate to retrorse, non-glandular trichomes 2
Stems, branches, floral axes and the lower surface of the leaves with antrorse, non-glandular trichomes 14

2. Leaf lamina with 9–34 teeth on each margin 3
Leaf lamina with 4–10 teeth on each margin 13

3. Stems and lower leaf surfaces with dense glandular trichomes 4
Stems and lower leaf surfaces lacking or with only scattered glandular trichomes 8

4. Fruiting calyx divided to about the middle; lateral lobes 1.5–2.0 times as long as wide; lower lobes 2.5–4.0 times as long as wide 5
Fruiting calyx divided to the middle or beyond; lateral lobes 2.5–4.0 times as long as wide; lower lobes 4–5 times as long as wide 7

5. Calyx in flower 2.3–3.3 mm long; upper lobe of fruiting calyx nearly as wide, but usually much narrower than long, longer than lateral lobes . . . . . . **P. diversus**
Calyx in flower 1.6–2.3 mm long; upper lobe of fruiting calyx as wide, but usually wider than long, not longer than lateral lobes 6

6. Trichomes silver, flowers in verticillaster 10–12, corolla 9.8–12.2 mm long . . . . . . **P. torrenticola**
Trichomes clear, flowers in verticillaster 12–15, corolla 7.8–9 mm long . . . . . . **P. graveolens**

7. Stems and leaves lacking sessile glands; leaf teeth pairs 7–15; racemes sparsely flowered . . . . . . **P. mirus**
Stems and leaves with sessile glands; leaf teeth pairs 12–34; racemes densely flowered . . . . . . **P. foetidus**

8. Stems and leaves lacking sessile glands . . . . . . **P. amboinicus**
Stems and leaves with sessile glands 9

9. Leaf lamina 2.0–2.5 times as long as wide; petiole 0.1–0.2 times as long as lamina . . . . . . **P. alloplectus**
Leaf lamina 1–2 times as long as wide; petiole 0.2–0.5 times as long as lamina 10

10. Sessile glands 4-celled 11
Sessile glands 8-celled 12

11. Verticillasters 14–16-flowered . . . . . . **P. graniticola**
Verticillasters 6–10-flowered . . . . . . **P. argentatus**

12. Leaf lamina with 7–12 teeth on each margin, verticillasters 10-flowered . . . . . . **P. amicorum**
Leaf lamina with 12–28 teeth on each margin, verticillasters 14–16-flowered . . . . . . **P. omissus**

13. Stems lacking a tuberous base; inflorescence axis lacking or with only scattered sessile glands . . . . . . **P. suaveolens**
Stems with a tuberous base; inflorescence axis with dense sessile glands . . . . . . **P. parviflorus**

14. Leaf lamina serrate in upper half only . . . . . . **P. minutus**
Leaf lamina serrate for entire length 15

15. Subshrubs to 60 cm high; inflorescence cymose, with 1–5 branches; verticillasters 8–15 mm apart 16
Shrubs 1–2 m high; inflorescence ± paniculate with up to 11 branches; verticillasters 2–10 mm apart 20

16. Leaf lamina with 3–6 teeth on each margin . . . . . . **P. arenicola**
Leaf lamina with 7–23 teeth on each margin 17

17. Leaf trichomes drying yellow, corolla 13–16 mm long . . . . . . **P. blakei**
Leaf trichomes drying clear, corolla 7–12 mm long 18

18. Stems with sessile glands; upper leaf surface matt; verticillasters 10–20-flowered . . . . . . **P. gratus**
Stems lacking sessile glands; upper leaf surface glossy; verticillasters 6–10-flowered 19

19. Stems, leaves and racemes lacking glandular trichomes; axis bracts lanceolate-triangular, 3.7–3.8 mm long; corolla tube bent at c. 30° **P. nitidus**
Stems, leaves and racemes with scattered glandular trichomes; axis bracts ovate, 1.2–1.8 mm long; corolla tube bent at 90–120° . . . . **P. apreptus**

20. Calyx 1.8–2.7 mm long in flower, 3.5–4.5 mm long in fruit; verticillasters 12–20-flowered . . . . **P. spectabilis**
Calyx 1–1.6 mm long in flower, 2–3.2 mm long in fruit; verticillasters 20–50-flowered . . . . **P. congestus**

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